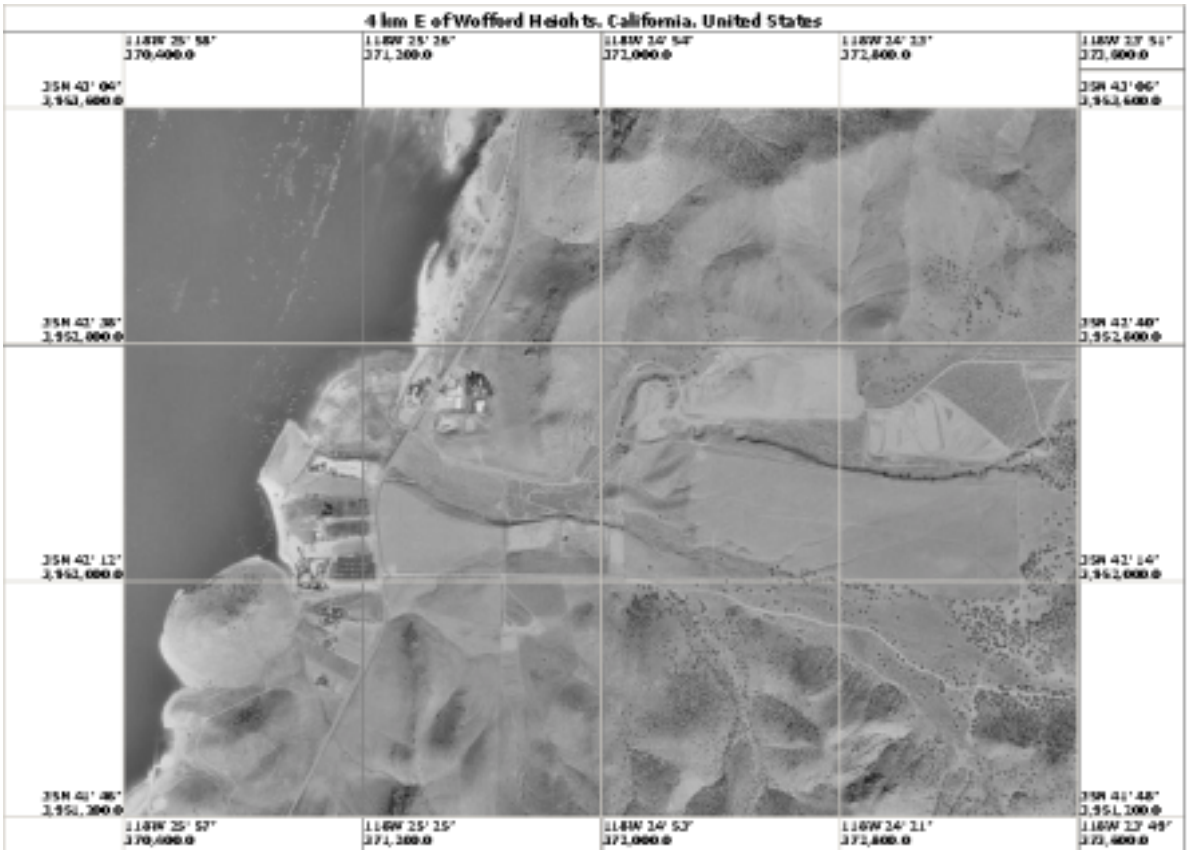
California Integrated
Waste Management Board

DRAFT
Site Investigation Workplan
Cyrus Canyon Disposal Site
Kern County



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SWIS # 15-CR-0069

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1. Introduction

The California Integrated Waste Management Board (CIWMB) Closed, Illegal and Abandoned Site (CIA) program investigates solid waste disposal sites and provides site data and documentation to quantify requirements for both enforcement and potential clean-up activities by the IWMB Solid Waste Cleanup Program (AB 2136). Depending on the types of wastes at the site, environmental sampling may be necessary to determine if hazardous materials are present for the purpose of scoping enforcement and remediation work or referral to either the Regional Water Quality Control Board (RWQCB) or the Department of Toxic Substances Control (DTSC).

Typically, municipal burnsites contain heavy metals such as lead, nickel, cadmium, chrome and zinc, although other metals such as copper, iron and aluminum may also be present. Other potential constituents of concern may be total petroleum hydrocarbons (TPH) as benzene, toluene, ethylbenzene and xylene (BTEX) or diesel, organochlorine pesticides, polychlorinated biphenyls (PCBs) and Dioxins.

The Cyrus Canyon Disposal Site is estimated to have been active between 1960 to 1996. Disposal activity included placing solid waste on a 1:1 slope and burning in place. It is unknown if buried waste exists at this site, although this will attempt to be verified as part of this sampling and analysis activity.

Statutory authority for investigating solid waste disposal sites is in California Public Resources Code (PRC) Section 45013, et seq.

1.1. Site Location and Description

The site is located in Eastern Kern County in the flood plain of Cyrus Canyon near the Kern Valley Solid Waste Disposal Site (SWIS No. 15-CR-0069). The legal description is SW ¼, Section 35, T25S, R33E, MDM. The property encompasses 128 acres adjacent to the Kern Valley Sanitary Landfill. A USGS site location/topographic map is shown in Figure 1. A 1996 aerial photograph with a latitude and longitude grid of the site is shown in Figure 2.

The parcel is identified as Kern County Assessor's Parcel number 296-070-25. The property includes a total of approximately 128 acres, zoned A, Exclusive Agricultural Zone, by Kern County. .

Figure 1. Area Location Map of Cyrus Canyon Disposal Site

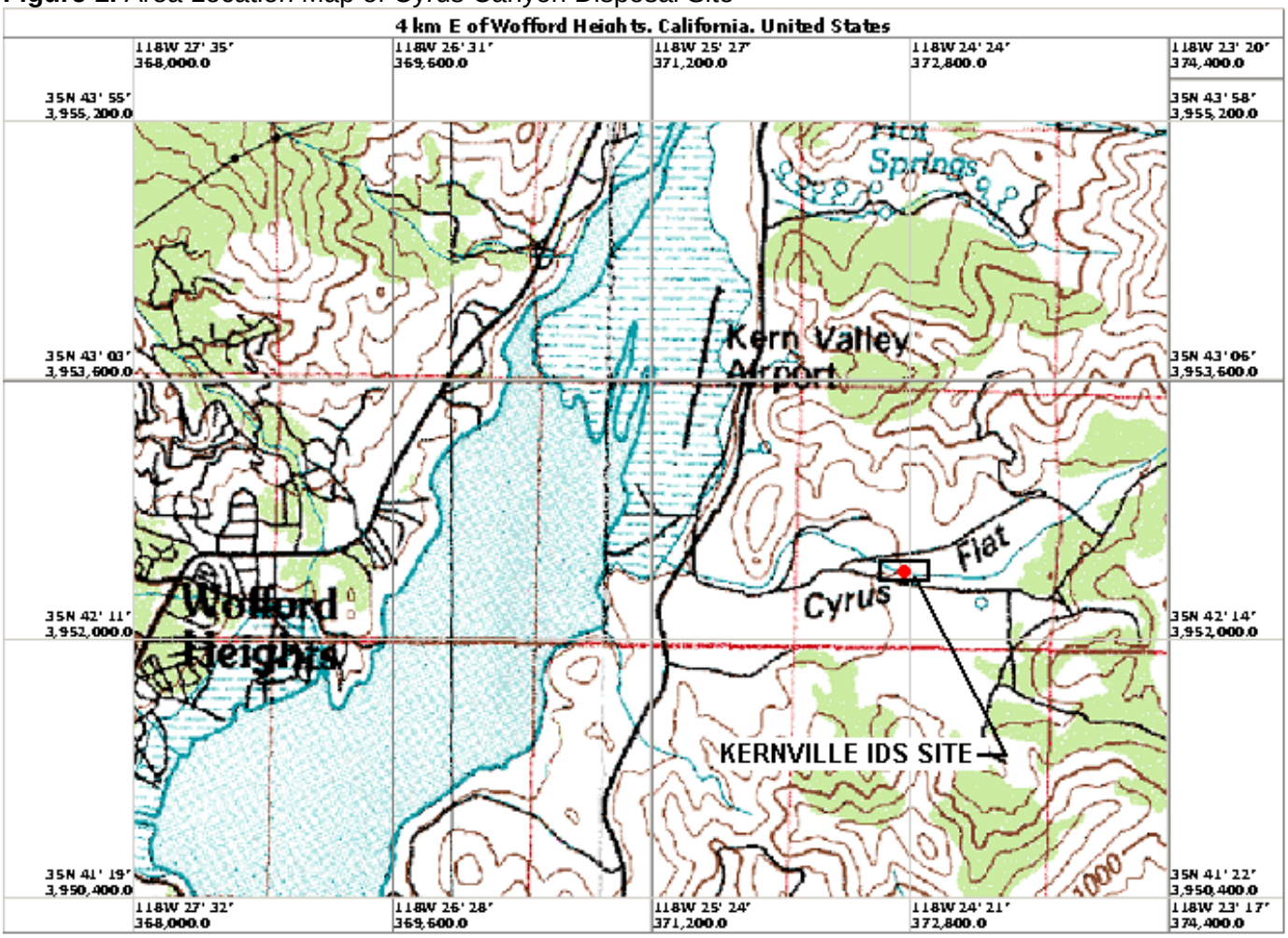


Figure 2. Aerial Photo Map

1.2. Project Background

The Remediation, Closure & Technical Services (RCTS) Branch's Solid Waste Clean-up Program, a.k.a. AB 2136 program, was requested by the Federal Bureau of Land Management (BLM) and the Kern County Solid Waste Management Department to perform a site remediation of the Cyrus Canyon Disposal Site.

1.3. Project Purpose

The objective of the investigation is to provide site data that will allow the SWCP to clean-close the site and use the soil and waste material for foundation material for the Kernville Solid Waste Landfill located adjacent to the site. The Kernville Solid Waste Landfill is in the process of final closure and material from the Cyrus Canyon Disposal Site could potentially be used to provide "fill" for the foundation of the final cover to achieve final grades. The site data will include a characterization of the horizontal and vertical extent of the disposal area based on trenching and potholing data and constituent data from analysis of soil samples in shallow soils 6 inches to 1 foot and at depth (3 to 6 feet). The site data will also include providing an estimate of the volume of waste, burn-ash and contaminated soil at the site. A statistical waste characterization data analysis will be performed using SW-846 procedures to determine with an 80% confidence the classification of the waste material with respect to land disposal requirements.

1.4. Responsible Agency

The CIWMB will be responsible for preparing the sampling plan, performing the sampling, site trenching, reviewing the sample report, and providing the sampling report to the Federal Bureau of Land Management, Kern County Solid Waste Management Department and Kern County LEA for further action. CIWMB will also prepare a site investigation report and place both the sampling report and site investigation report in Board Files and update the site's Solid Waste Information System (SWIS) database.

1.5. Project Organization

The site investigation and sampling and analysis plan and report preparation will be conducted by CIWMB CIA Section Staff. The CIA Section Senior Engineer, Mr. Glenn K. Young, P.E. will oversee preparation of the sampling and analysis report, conducting sampling and analysis activities and preparation of the draft and final sampling and analysis report. Mr. Andy Marino, of IWMB's Health and Safety Section will be responsible for preparing a site specific health and safety plan and monitor onsite health and safety issues. As lead on the project, Mr. Young may be reached at the California Integrated Waste Management Board 1001 "I" Street, P.O. Box 4025, Sacramento, CA 95812-4025 or by calling (916) 341-6696. The CIWMB will use its own sampling equipment and obtain sampling containers, labels, chain-of-custody forms and shipping containers from its environmental laboratory services contractor, ExcelChem, Inc. The SWCP contractor, Guinn Construction will provide a tracked excavator (Cat 235 or equivalent) and 40-hour trained operator for determining the site's horizontal and vertical extents and for soil sampling. Surveying, logging and photographing of trenches will be performed by IWMB staff.

IWMB will be responsible for surveying and marking sampling locations, mapping waste areas and sampling locations, sample packaging, shipping, and analysis, and producing a sampling report. Potholing and trenching activities will be performed by the SWCP contract, Guinn Construction with guidance from CIA Section staff. The sampling containers and laboratory analysis for the soil samples will be through IWMB Contract IWM-C9037 with ExcelChem Environmental Laboratories, Inc. located at Roseville, CA

1.6. Previous Investigations

The Cyrus Canyon Disposal Site has been investigated by both the LEA and Kern County Waste Management Department. The KCWMD has performed an investigation of the site on January 1997 and completed CIWMB Site Identification and Site Assessment Forms. In summary the investigation concluded that the disposal area is less than 5 acres in size and is approximately 1-6 feet in depth. The site was operated from the early 1940s until the 1960s. Evidence of the site includes surface debris, which includes, glass, metals and burn ash.

A Phase I/II Environmental Site Assessment was performed by WZI, Inc in March 1997 for the KCWMD. Based on a site map (Figure 4) and trench logs (Figure 5) prepared by WZI Consultants (consultant to Kern County Waste Management Department), the limits of waste have been located during previous field investigation activities conducted in February 1997 (see waste location areas in Figure 4). Analysis of burned material and soil from trenches containing waste (T2, T3, T5, T6 and T8) showed concentrations of lead of 673, 958, 6, 749, 8160, 4.6, 3.5 and 4.8 mg/kg. Additional samples will be performed in the concentrated areas of waste near T2, T3, T5, T6 and T8. Low levels of organochlorine pesticides were detected in samples taken from trenches with waste.

The map prepared by WZI, will be used to develop the initial sampling grid, which will be surveyed and staked to establish potholing and sampling locations. The sampling grid to be used will be based on a latitude and longitude grid which will be located by GPS handheld units which are accurate to 15 feet.

To the CIWMB's knowledge no other governmental agency, including the Regional Water Quality Control Board (RWQCB) or Department of Toxic Substances Control Division have conducted a previous investigation of the site.

2. Project Objective

2.1. Data Collection

Sampling will be conducted under the California Code of Regulations, Title 22, section 66261.10 et seq. for characterizing hazardous waste. The CIWMB will use regulatory limits established from the California Department of Toxic and Substance Control and federal levels for evaluating the soil/ash. Discrete soil samples will be analyzed for CAM 5 metals, and composite samples for specified waste areas will be analyzed for CAM 17 metals, total petroleum hydrocarbons (TPH) as benzene, toluene, ethylbenzene and xylene (BTEX) and diesel, organochlorine pesticides, PCBs, semivolatiles and Dioxins. If metal constituent concentrations in any sample exceeds ten times the Soluble Threshold Limit Concentration (STLC), the 22 CCR Waste Extraction Test will be performed to determine metal leachability. Since the burnash may be disposed of to a municipal solid waste landfill, it will be necessary to determine if the soil-ash is considered hazardous for the purpose of handling and disposition. The data from these procedures will be used to identify lead concentrations in surface soils and subsurface burn ash.

2.2. Project Tasks

During the investigation of the Cyrus Canyon Disposal Site a sampling location reference grid will be established and tied to an established benchmark at the site or GPS handheld unit obtained latitude and longitude. Authoritative sampling based on site conditions will be performed and the location referenced to the reference grid. Sampling at a location will include the first 6-inches, at mid-depth 3-5 feet (depending on site geology) and native soil beneath the trench. If site geology consists of bedrock formations beneath the site, only sampling of surface soils will be accomplished.

The site is undeveloped and is located on a 1:1 slope. Authoritative sampling may be performed if burn-ash and waste material are visually identified.

Under the authoritative sampling protocol, the CIWMB field engineer may change individual sampling locations based on site specific field conditions (including unforeseen obstructions, visible signs of contaminated soils or other factors). CIWMB anticipates that approximately 25 samples will be collected from surface and subsurface locations. Each soil sample will be screened using a combustible gas indicator and also screened for radioactivity using field equipment and then sent to a State of California certified hazardous waste laboratory for analysis. Sampling activities are scheduled to occur in July 2002. After samples are collected the ground surface will be restored by replacing and compacting trench spoils.

2.3. Expected Data

Chemical constituent concentration data obtained during this investigation will be evaluated to determine if additional sampling is necessary. Additional sampling may be performed if it is found that specific constituent levels exceed hazardous levels specified in 22 CCR, e.g. STLC

for Lead is much greater than 5 mg/l. Based on information known about the site the following is expected:

a) Wastes distribution over the entire slope will be will be concentrated in specific areas
b) Residual concentrations of heavy metals from the burning of solid waste will be present in burn ash and soil samples (<2000 mg/kg). Metals detected will most likely include lead, copper, nickel, zinc and chrome. Iron and aluminum also may be present.
c) Since slope is steep, sloughing of waste has probably occurred and generally waste distribution will be concentrated toward the toe of the slope (this will be verified by trenching at the invert and toe of the slope to ascertain the native slope condition
d) Amount of burn-ash and contaminated soil in place does not exceed 10,000 cubic yards

3. Sampling Plan

This sampling plan is intended to document the procedural and analytical requirements for this and any subsequent sampling events performed to collect soil samples and to characterize areas of potential contamination from the Cyrus Canyon Disposal Site. This plan was compiled after reviewing the US Environmental Protection Agency's, Region 9, guidance document "Instructions for the One-time Sampling Event Sampling and Analysis Plan" dated March 1998.

3.1. Sampling Methodology

Discrete sampling will be used to assess the burn ash and surrounding soils. The sampling will be conducted by using a systematic grid sampling protocol at locations shown on Figure 3. Authoritative protocol may be used at each grid location allowing the investigator the flexibility to move sampling locations, as necessary, to accommodate unforeseen field conditions. The following outline describes the proposed sampling:

- Samples of surface soil or waste (less than six inches deep) and subsurface soils/waste 1-5 feet will be collected as shown in figure 3 (Sampling Locations). A total of 22 locations will be sampled. Locations were selected based on areas visually identified as burned debris areas. A visual inspection for surface waste remnants (broken glass, cans or other debris) will be performed to confirm the areas to be sampled.

- Trenching will be performed at surface sampling locations to determine if subsurface waste is present. Samples of subsurface soils will be taken based on presence and extent of waste material.

Each sample will be collected using either decontaminated or designated sampling equipment. Samples will collected into disposable buckets using either decontaminated stainless steel or disposable trowels, homogenized, and then transferred into laboratory-supplied containers. Reusable sampling equipment will be decontaminated between each sampling event. Decontamination will follow the procedures outlined in Section 3.5 of this sampling plan. Personnel who collect samples will be required to change their gloves between each sampling event.

3.2. Sampling Equipment

The following equipment will be necessary to perform the sampling

- Disposable or stainless steel (SS) trowels
- Sealable plastic bags
- One Auger with extensions to reach 10 feet
- Four SS tubes
- Teflon sheets to cover ends of SS tubes
- Plastic end caps for SS tubes
- Transfer containers for SS tubes
- 5 gallons of deionized/distilled water
- Field log book
- Survey lath
- First aid kit and eye wash
- Mailing labels and markers
- Cooler and ice or blue ice
- Packing and duct tape
- Eight-ounce wide mouth glass jars
- One SS mixing bowl

- 500 mL of 0.1 N nitric acid in a spray bottle
- Chain of custody forms and custody seals
- Level C health and safety equipment (Tyvex, tape, respirator with HEPA filter)
- Decontamination equipment (2 ½ gallon sprayer, non-phosphate detergent, disposable brush, paper towels, cotton towels, polyethylene sheeting)

3.3. Sampling Procedures

Surface soil samples will be collected using either decontaminated or disposable trowels. At each trench location, soil will be collected within the upper six inches of the apparent ground surface, approximately half the depth of the trench (or authoritative as noted in field notes) and in the native soil beneath the trench. To minimize the possibility of cross contamination, soil samples will first be collected at locations expected to be the least contaminated, proceeding last to areas of suspected or known significant contamination.

Subsurface sampling will not begin until all surface samples are collected. Subsurface samples will be collected using decontaminated stainless steel or disposable trowels from trenches excavated by the Contractor's (Guinn Construction) backhoe. Upon completion of sampling at a location, the backhoe will replace trench spoils and recompact the filled trench.

After each sample is collected it will be placed in a laboratory-supplied container, labeled, logged on the chain-of-custody document, screened for radioactivity, sealed, and stored in an ice chest that is cooled to 4 degrees Fahrenheit.

At the completion of sampling activities, IWMB staff will deliver the selected samples to a State of California certified hazardous waste laboratory for analyses using strict chain-of-custody protocols.

3.4. Sample Locations

Although trenching and sampling locations are proposed in Figure 3, exact soil sampling locations will be determined in the field based on accessibility, the presence of unforeseen impedances or other factors. Final soil sample locations will be recorded in the field logbook and staked in the field when sampling is completed. A survey crew will locate each trench and sample on the final site map. The map will be provided in a final sample report.

3.5. Decontamination Procedures

All equipment that comes into contact with potentially contaminated soil/burn ash will be decontaminated in a predesignated area. Disposable equipment intended for one-time use will not be decontaminated, but will be packaged for appropriate disposal. Decontamination will occur prior to and after each use of a piece of equipment. All sampling devices used, including trowels and augers, will be decontaminated by IWMB staff.

The following decontamination procedures for primary contaminant, inorganic (metals):

1. Non-phosphate detergent and tap-water (bottled water) wash, using a brush if necessary
2. Tap-water rinse
3. 0.1 N nitric acid rinse

4. Deionized/distilled water rinse 2x

3.6. Sample Containers and Preservation

Pre-cleaned containers will be supplied by the laboratory and will not be rinsed prior to sample collection. No preservative will be added to the containers.

3.7. Disposal of Residual Materials

In the process of collecting environmental samples at the Cyrus Canyon Disposal Site the CIWMB sampling team will generate different types of potentially contaminated investigation-derived waste (IDW) that may include:

- Used personal protective equipment (PPE)
- Disposable sampling equipment
- Decontamination fluids

The U.S. EPA's National Contingency Plan requires management of IDW generated during sampling comply with all applicable or relevant and appropriate requirements to the extent practicable. The IDW will contain minor residual amount of the soil/burn ash. These wastes are not considered hazardous and will be disposed of at a municipal landfill. Used PPE and disposable equipment will be double bagged and placed in municipal refuse dumpster. Any PPE and disposable equipment that is to be disposed of which can still be used will be rendered inoperable before disposal. Decontamination fluids that will be generated during sampling will consist of nitric acid, deionized water, residual contaminants, and water with non-phosphate detergent. The volume and concentration of the decontamination fluid will be sufficiently low to allow disposal at the site or sampling area. The water with detergent will be poured onto the ground or into a storm drain. The nitric acid will be diluted and tested with pH paper before pouring onto the ground or into a storm drain.

If hazardous or radioactive material are found during sampling screening activities, appropriate level of notification and response procedures will be implemented in accordance with the Site Specific Health and Safety Plan.

3.8. Analytes of Concern

Analytes of concern at this site are residual heavy metals from burning solid waste and any unburned organic materials left in the soil matrix.

3.9. Analytical Procedures

Each sample container's head space will be tested using an organic vapor analyzer (OVA) and a portable radiation meter. Samples will be swiped with pH paper to determine sample pH. After field screening the sample containers will be capped, sealed and labeled (see packaging procedures),

and sent to IWMB's contract laboratory, ExcelChem, where discrete samples will be analyzed for CAM 17 metals (antimony, arsenic, barium, berylium, cadmium, chromium (VI), cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silber, thallium, vanadium, zinc) and compared to the 22 CCR Total Threshold Limit Concentrations (TTLC), and the 22 CCR Waste Extraction Test (WET) to determine if Soluble Threshold Limit Concentration (STLC) limits are exceeded. Note: Composite samples will be analyzed for CAM 17 metals, TPH BTEX/Diesel, organochlorine pesticides, PCBs and WET (to determine if STLC is exceeded). Selected burn ash samples will also be tested for semivolatiles (EPA method 8270C).

3.10. Anticipated Cost

Based on discussions with ExcelChem Analytical Laboratory the following sampling costs are presented:

EPA METHOD	PARAMETER	UNIT COST	# SAMPLES	COST
6010/7417	CAM 17 Metals	$210	22	$4620
22CCR WET	STLC (>10X)	$60	22	$1320
608/8080	O-pest/PCBs	$100	7	$700
602/8020/8015m	TPH/BTEX/d	$100	7	$700
8270	Semi-Volatiles	$300	7	$2100
8280A	Dioxins	$800	3	$2400
			Total	**$11840**

3.11. Field Quality Control

One field duplicate sample will be collected simultaneously with a standard sample from the same source under identical conditions into a separate sample container. The duplicated sample is treated independently of its counterpart in order to assess laboratory performance through comparison of the results.

The duplicate samples will be collected at a random location that demonstrates elevated levels of metals based on field screening results. Sufficient soil will be collected from the sample location to prepare a primary and duplicate sample from a single batch of soil. The soil sample will be homogenized with a trowel in a sample-dedicated one-gallon disposable pail or a decontaminated stainless steel mixing bowl, and then transferred to each sample container for both regular and duplicate sample analyses.

3.12. Laboratory Quality Control

The analytical laboratory will perform Quality Control (QC). The QC will include project specific QC, method blank results, laboratory control spike, and matrix spike results.

1. Project Specific QC – No project specific QC has been requested by the CIWMB

2. Method Blank Results – A method blank is a laboratory-generated sample that assesses the degree to which laboratory operations and procedures cause false-positive analytical results for the CIWMB samples. The method blank results associated with the samples will be included with the analytical results.

3. Laboratory Control Spike – A Laboratory Control Spike (LCS) is a sample that is spiked with known analyte concentrations, and analyzed at approximately 10 percent of the sample load in order to establish method-specific control limits. The LCS results associate with CIWMB samples will be attached on the LCS and LCS Duplicated Analysis Report.

4. Matrix Spike Results – A matrix spike is a sample that is spiked with known analyte concentrations and analyzed at approximately 10 percent of the sample load in order to establish method-specific control limits. The matrix spike results associated with CIWMB samples will be attached on the Matrix Spike and Matrix Spike Duplicate Analysis Report.

5. Accuracy – Accuracy will be measured by percent recovery as defined by:

$$\% \text{ recovery} = \frac{(\text{measured concentration}) \times 100}{(\text{actual concentration})}$$

4. Documenting and Reporting

4.1. Field Notes

A field logbook will be used to document the vital project and sample information. At a minimum, the following sample information will be recorded:

- Sample location and description
- Site or sample area sketch showing sample location and measured distances
- Sampler's name(s)
- Date and time of sample collection
- Designation of sample as composite or grab
- Type of sample (soil, sediment or water)
- Type of sampling equipment used
- Field instrument reading, if applicable
- Field observations and details related to analysis or integrity of samples (e.g., weather conditions, noticeable odors, colors, etc.)
- Preliminary sample descriptions
- Sample preservation
- Sample identification numbers and explanatory code
- Name of recipient laboratory

In addition to the sampling information, the following specific information will also be recorded in the logbook:

- Team members and their responsibilities
- Time of arrival and departure
- Deviations from the sampling plan
- Level of health and safety protection

4.2. Photographs

Photographs will be taken at the sampling location and at surrounding areas. The photos will verify information entered in the field logbook. Each photo taken will be written in the logbook with the approximate time, date, and location.

4.3. Labeling

All samples collected will be labeled in a clear and precise way for proper identification for tracking in the laboratory. Each sample will reference the sample date, the type of sample (S – surface; B – subsurface), and the sample point identification as shown on the pin flag.

4.4. Chain-of-Custody

A chain-of-custody record will accompany all sample shipments. Shipped samples will have a custody seal placed across the lid of each sample container. All custody seals will be signed and dated.

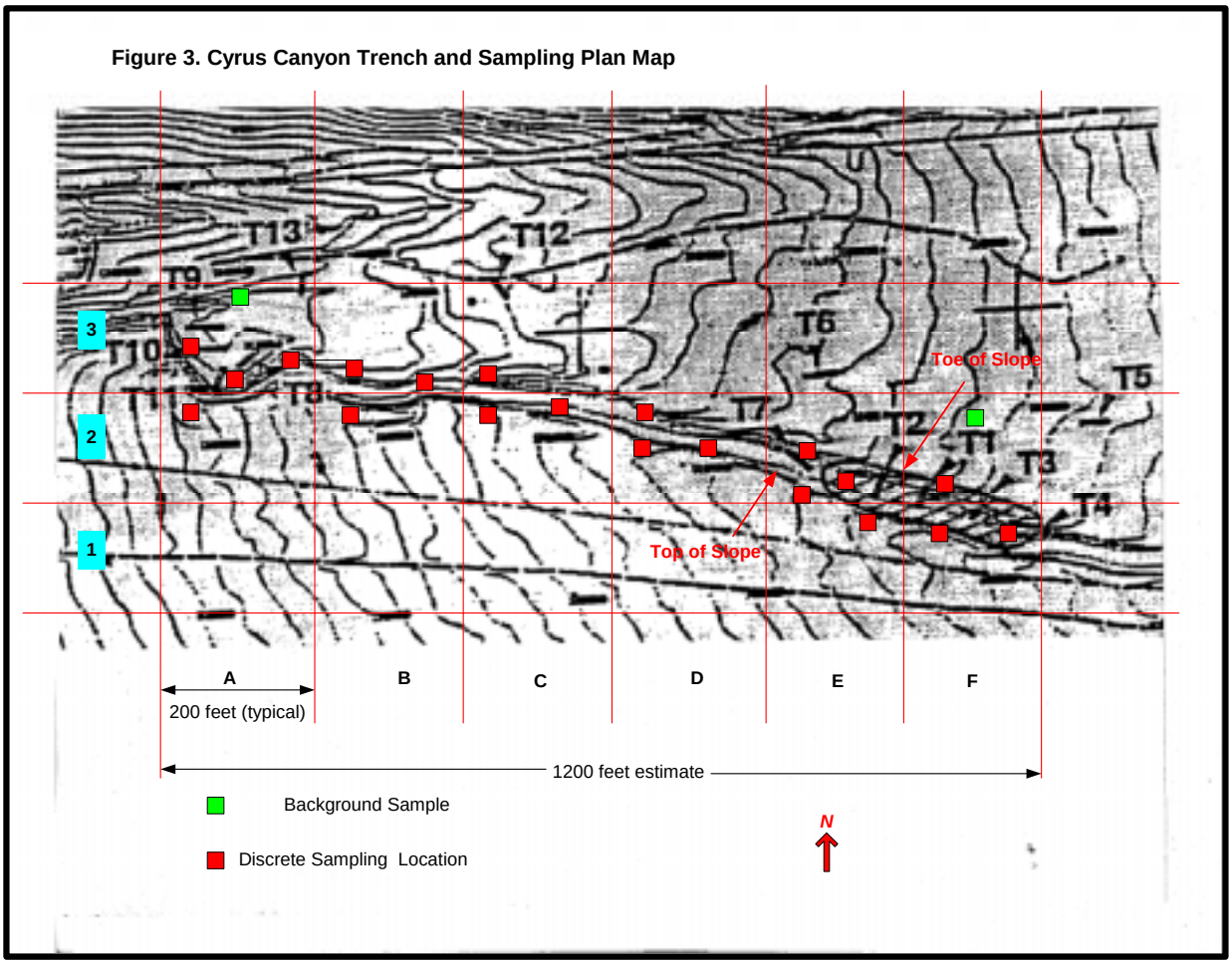
4.5. Packaging and Shipment

All sample containers will be placed in a strong-outside shipping container and will have the drain plug sealed, if applicable, to prevent melted ice from leaking out of the cooler. If ice is used to cool the samples, the ice will be packed in a double zip-lock bag. Special care will be provided to secure and prevent damage to the sample containers.

4.6. Reporting

Once the analytical results are received and evaluated, IWMB will prepare a sampling report describing the nature of the waste and discuss the analytical results. The CIWMB anticipates submitting the sampling report to the Solid Waste Clean-Up Program (Mr. Jeff Cornette) and Kern County Waste Management within 30 days after receipt of the analytical results.

Figure 3. Cyrus Canyon Trench and Sampling Plan Map



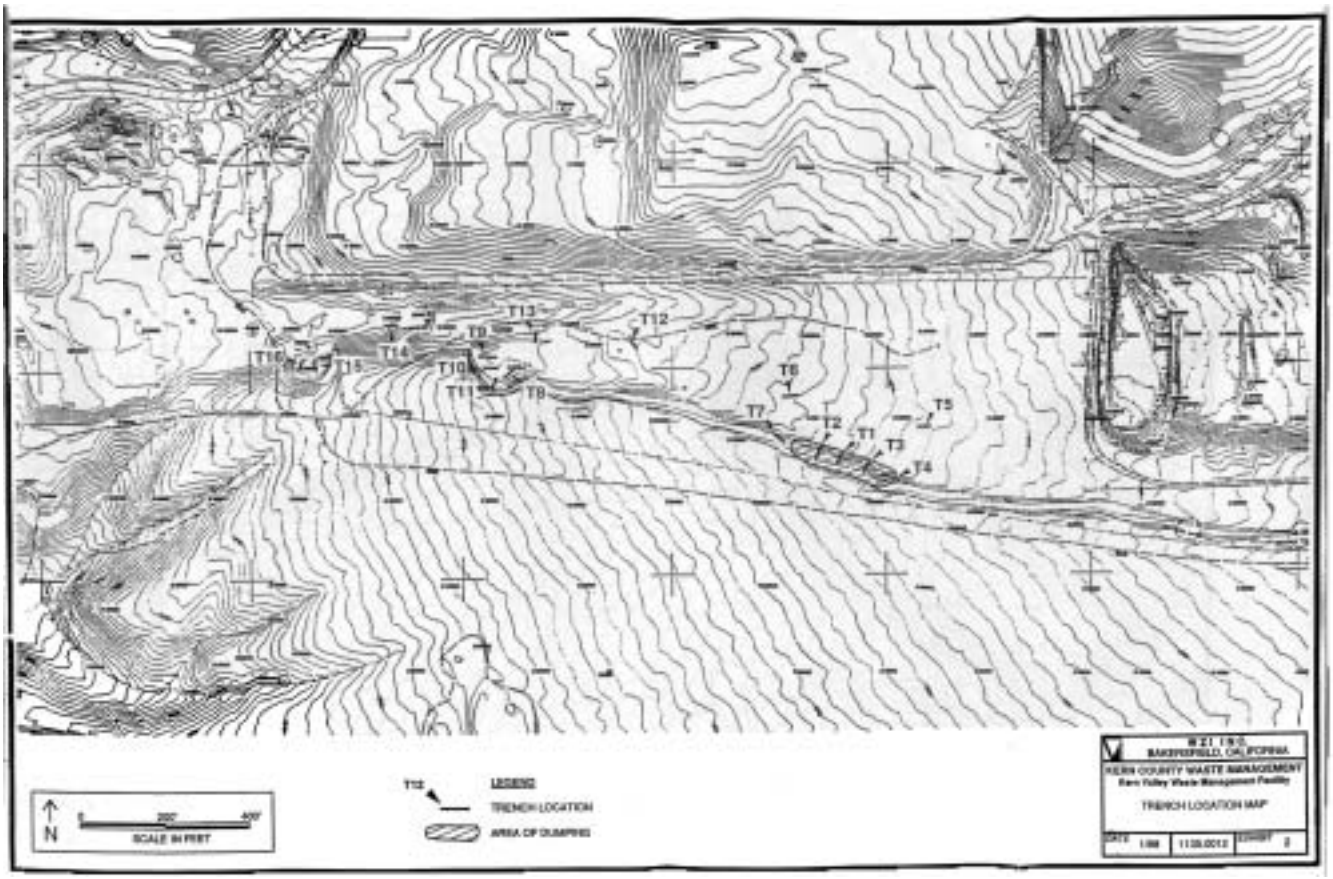


Figure 4: WZI, Inc Phase I/II ESA Trench Location Map

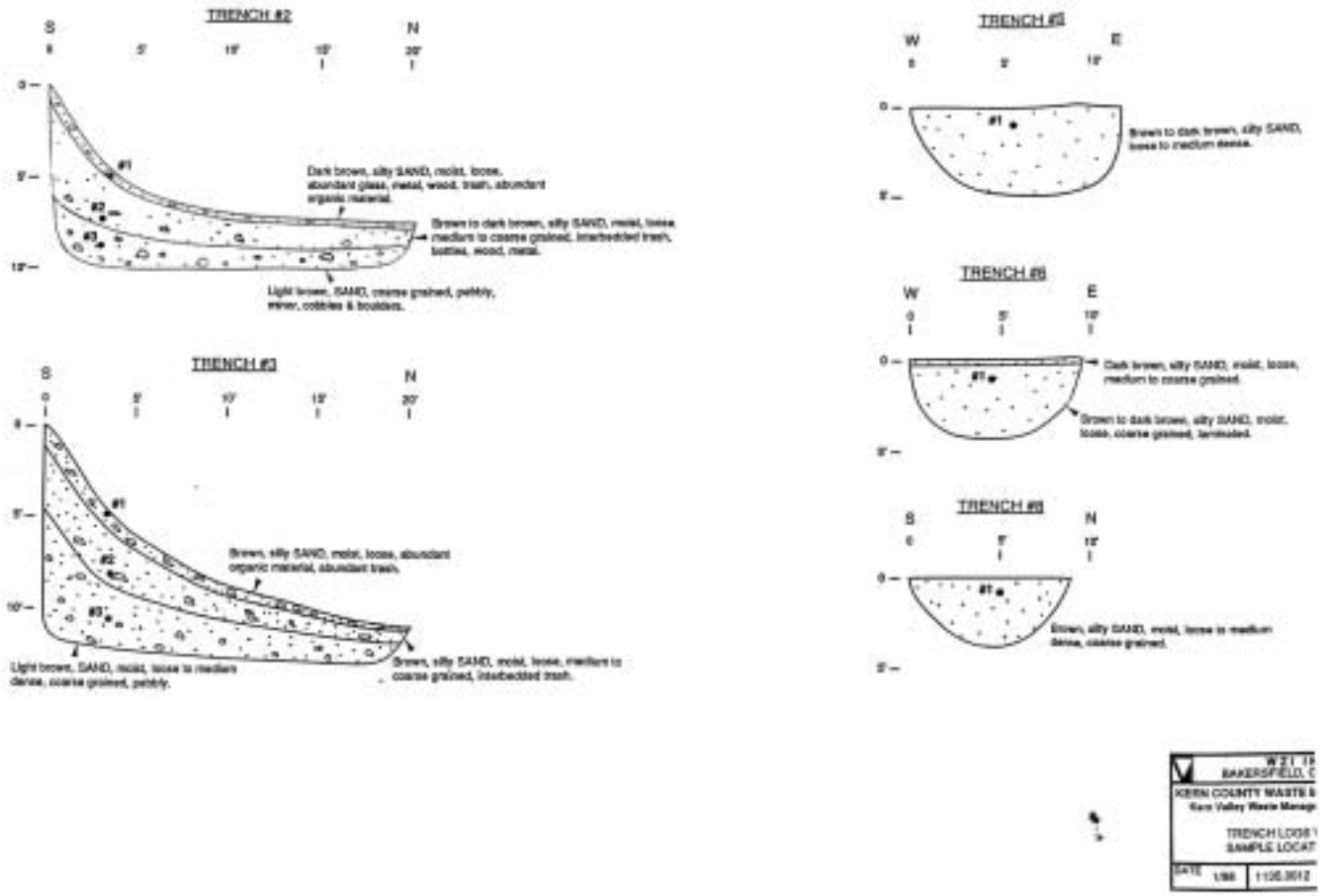


Figure 5: Cyrus Canyon Disposal Site Phase I/II Trench Logs